Asthma in New Jersey
Annual Update 2003

The prevalence of asthma in the United States has increased over the past two decades, and data suggest trends in New Jersey have followed the same pattern. This publication presents the most recent statewide data on asthma and is the first of a series of planned, annual updates to the information and data first presented in the report, *Asthma in New Jersey* (2002).[1] This update report is divided into two sections. Part 1 presents data on asthma prevalence, morbidity, and mortality for all New Jersey residents. These findings represent the efforts of New Jersey Department of Health and Senior Services (NJDHSS) staff working under the Centers for Disease Control and Prevention cooperative grant, *Addressing Asthma from a Public Health Perspective*. Part 2 presents occupational asthma data collected by NJDHSS staff within the Occupational Health Surveillance program.

Part 1 – Asthma Prevalence, Hospitalizations, and Mortality

Prevalence

Respondents to the New Jersey Behavioral Risk Factor Surveillance System survey (BRFSS) [2] are asked if they have ever been told by a doctor, nurse, or other health professional that they had asthma. According to the combined data from 2001 and 2002:

- Approximately 685,000 New Jersey adults (11% of the adult population) have been told by a doctor, nurse, or health professional that they had asthma.

- New Jersey women are about 50% more likely to report having ever been diagnosed with asthma than New Jersey men.

- Self-reported lifetime asthma prevalence declines significantly with age.

Black, non-Hispanic adults are the most likely to report having ever been diagnosed with asthma, followed by Hispanic adults and White, non-Hispanic adults.

Respondents who answered "yes" to having ever been told by a doctor that they had asthma were then asked if they still had asthma. This is referred to as current asthma prevalence. Using combined data for 2001 and 2002, 68% of those who reported a diagnosis of asthma during their lifetime still had asthma at the time of the interview.

Based on these estimates:

- Approximately 450,000 New Jersey adults (7% of the adult population) currently have asthma.

- The estimated number of women with asthma (290,000) is almost double the estimated number of men with asthma (160,000).

- Current asthma prevalence estimates range from 9% among 18 to 34 year olds to 6% among those aged 50 and over.

Figure 1. Estimated Prevalence of Current Asthma
New Jersey, 2001-2002
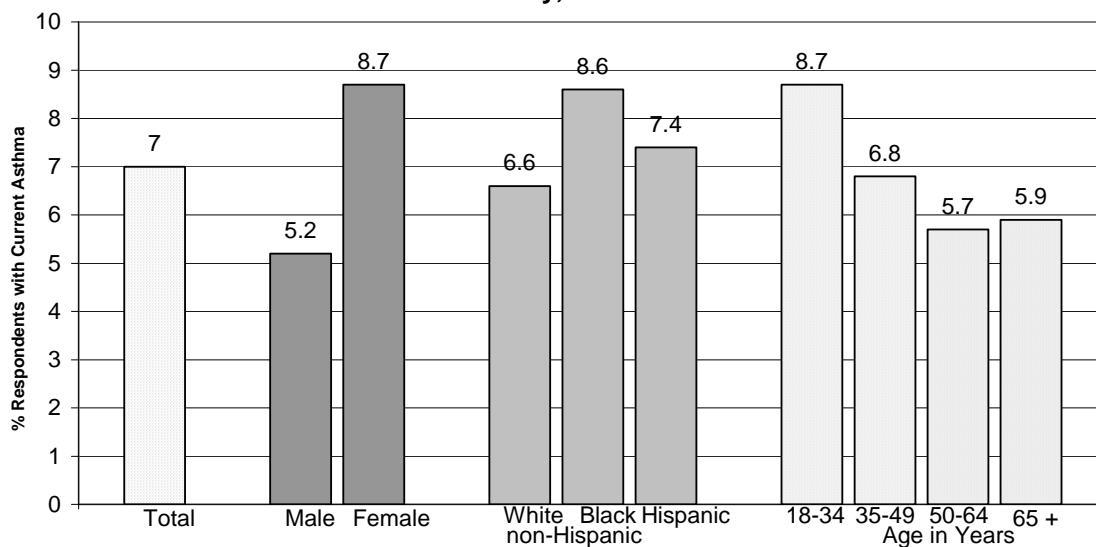
Source: New Jersey Behavioral Risk Factor Survey 2001-2002
New Jersey Department of Health and Senior Services Center for Health Statistics

These estimates are derived from self reported interviews and may be an underestimation of the actual asthma prevalence among New Jersey adults because they reflect only cases of asthma that have been diagnosed by a health care professional.

Childhood asthma questions were included in the 2002 and 2003 BRFSS surveys. While 2003 data have yet to be released, findings from the 2002 BRFSS survey include:

- 7% of New Jersey adults live in a household with at least one child who has been diagnosed with asthma.

- 5% of New Jersey adults live in a household with at least one child who currently suffers from asthma.

- 13% of New Jersey children have been diagnosed with asthma and 67% of these children still suffer from asthma.

Morbidity -Hospitalizations

Information used to estimate asthma morbidity can come from a variety of sources including physician office visits, emergency department visits, medication use, and hospitalizations. Currently in New Jersey, the only existing statewide information regarding asthma morbidity is hospitalization data.[3] Hospitalization discharge data have been collected and released annually from 1985 through 2002. During that time, hospitalizations for asthma have annually represented roughly 1 of every 100 hospitalizations, or approximately 14,000 per year.

It is anticipated that emergency department data will become available for analysis in early 2004 and will then be incorporated into this report series.

- Overall, women continue to have higher hospitalization rates for asthma than men. However, there is significant variation by age. Adult women have much higher hospitalization rates for asthma than men, but among children, boys have higher hospitalization rates for asthma than girls, particularly among children under five years of age.
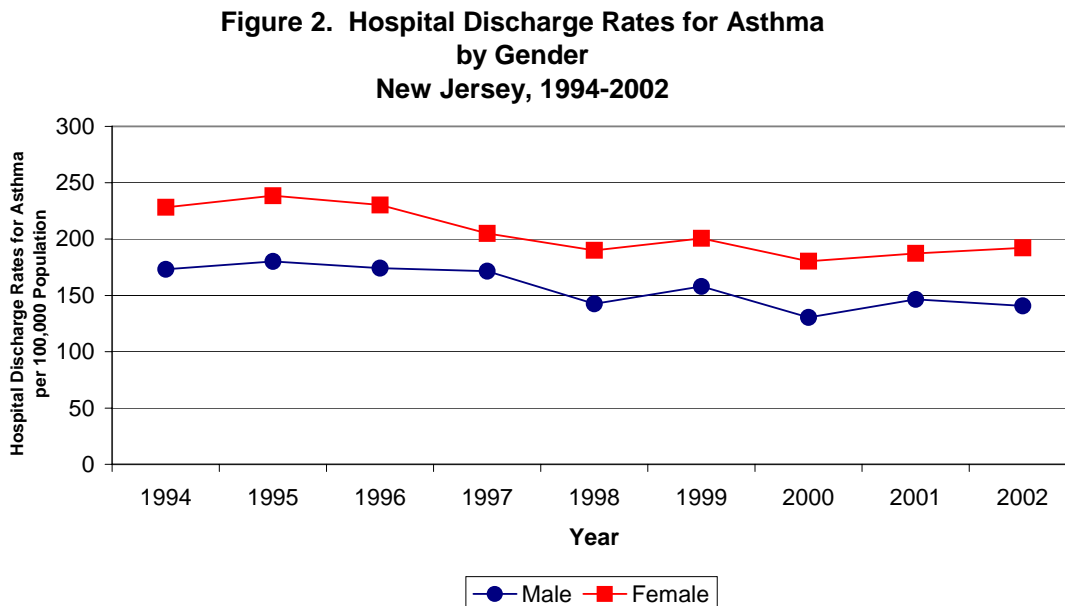
**Figure 2. Hospital Discharge Rates for Asthma
by Gender
New Jersey, 1994-2002**

Source: New Jersey Hospital Discharge Files (UB-92) 1994-2002
   New Jersey Department of Health and Senior Services, Center for Health Care Systems Analysis
   Rates represent hospitalization events of New Jersey residents, not individuals
   Asthma defined as a primary diagnosis with ICD-9 Code 493 et. al.

- Black non-Hispanic and Hispanic New Jersey residents are more likely to be hospitalized with asthma than white non-Hispanic residents. Black non-Hispanics are more than four times more likely than white non-Hispanic residents to be hospitalized for asthma while Hispanic residents are more than three times more likely than non-Hispanic whites to be hospitalized for asthma.
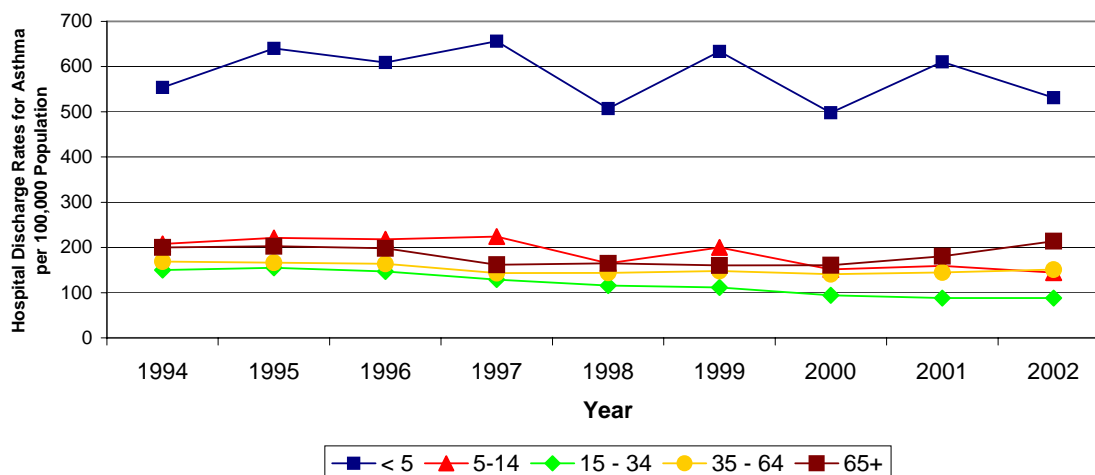
**Figure 3. Hospital Discharge Rates for Asthma
by Race/Ethnicity
New Jersey, 1994-2002**
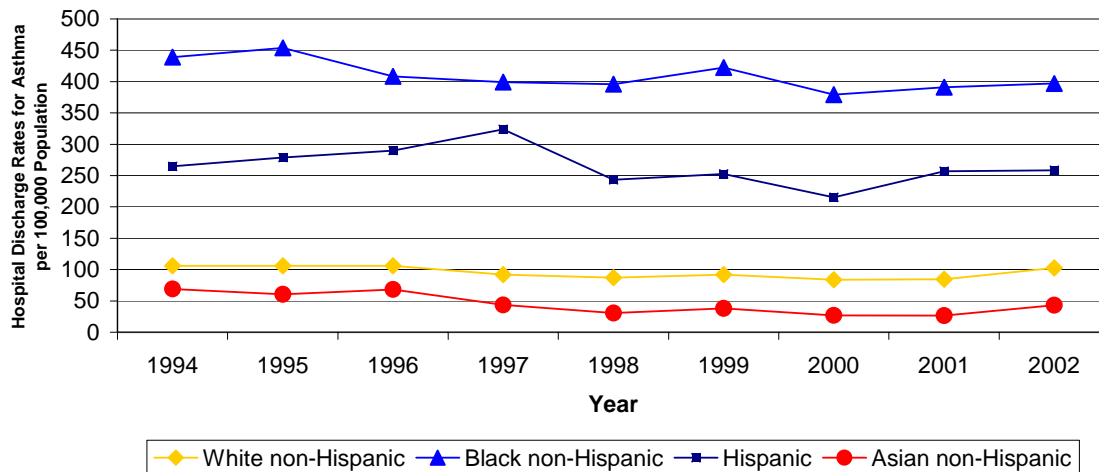
Source: New Jersey Hospital Discharge Files (UB-92) 1994-2002
New Jersey Department of Health and Senior Services, Center for Health Care Systems Analysis
Rates represent hospitalization events of New Jersey residents, not individuals
Asthma defined as a primary diagnosis with ICD-9 Code 493 et. al.

- Children are more likely to be hospitalized with asthma than adults. The highest hospitalization rate for asthma is for children under five years of age.

**Figure 4. Hospital Discharge Rates for Asthma
by Age Group
New Jersey, 1994-2002**

Source: New Jersey Hospital Discharge Files (UB-92) 1994-2002
New Jersey Department of Health and Senior Services, Center for Health Care Systems Analysis
Rates represent hospitalization events of New Jersey residents, not individuals
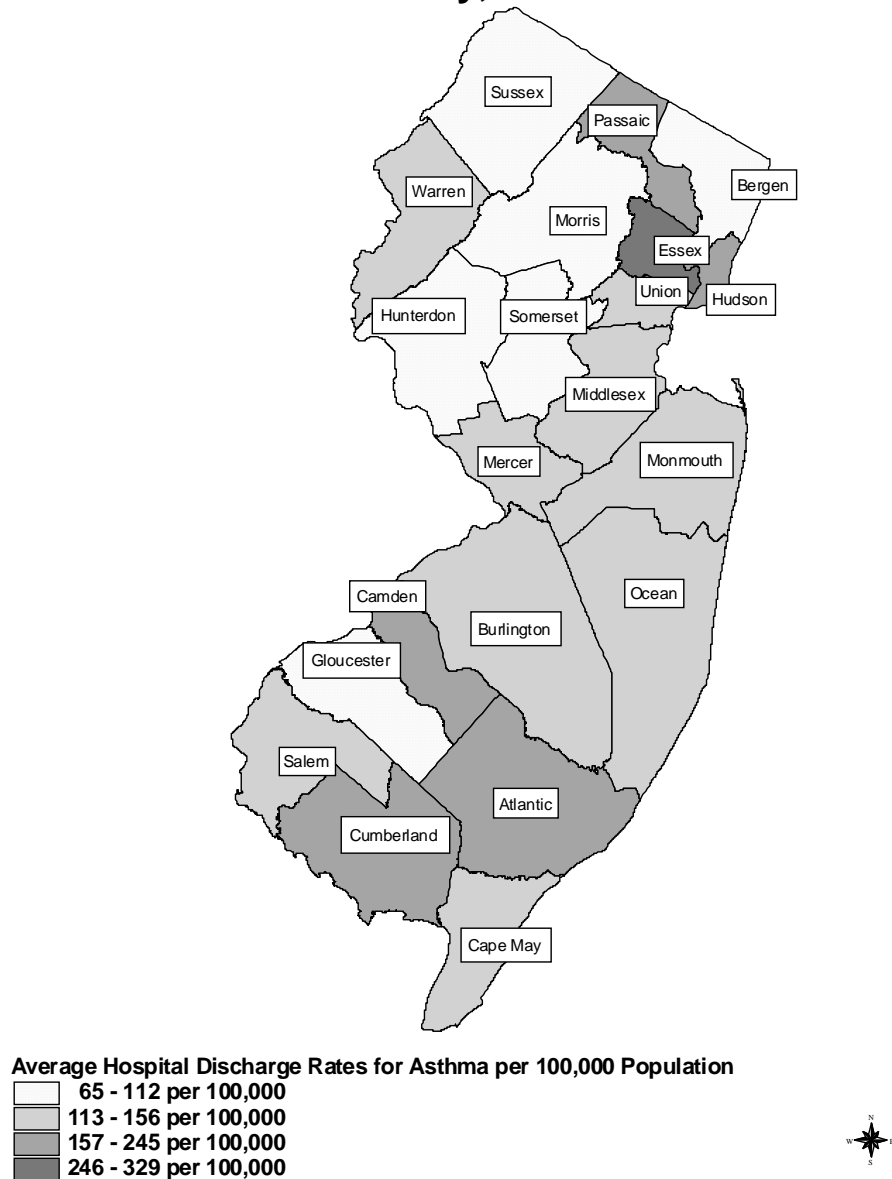Asthma defined as a primary diagnosis with ICD-9 Code 493 et. al.

In keeping with the format of *Asthma in New Jersey*, data on asthma prevalence, hospitalizations, and deaths are aggregated at the state level. Hospitalization data contained within this summary is also available to interested and relevant parties at municipal and ZIP Code levels.

The number of hospitalizations for asthma does not accurately reflect the number of persons who have experienced a hospitalization due to asthma. For conditions such as asthma, a few people may have been hospitalized on more than one occasion. Ongoing efforts by surveillance staff include the linking of yearly hospitalization files to determine the number of individuals hospitalized for asthma rather than the absolute number of hospitalizations. Results from linked files from 1994-2000 reveal that 22.9% of patients experienced more than one hospitalization for asthma within these years, accounting for 30.9% of the total discharges.

Further review of hospitalization for asthma data reveals that hospitalizations for asthma begin increasing in mid-September, peak in early October, and remain consistently high until the summer months. This variation is most evident among New Jersey residents age five years and under.

Asthma rates vary widely among the 21 counties of New Jersey. The higher rates experienced by black non-Hispanics and Hispanics overall reflect the concentration of such population groups within highly urbanized counties of New Jersey. Variability in hospitalization rates for asthma at the county level is also affected by fluctuations in the number of asthma hospitalizations and changes in population profiles within each county.

Figure 5. Average Hospital Discharge Rates for Asthma
New Jersey, 1998-2002

Average Hospital Discharge Rates for Asthma per 100,000 Population

- 65 - 112 per 100,000
- 113 - 156 per 100,000
- 157 - 245 per 100,000
- 246 - 329 per 100,000

Source: New Jersey Hospital Discharge Files (UB-92) 1994-2002
New Jersey Department of Health and Senior Services, Center for Health Care Systems Analysis
Rates represent hospitalization events of New Jersey residents, not individuals
Asthma defined as a primary diagnosis with ICD-9 Code 493 et. al.

Mortality

Death from asthma is uncommon. In New Jersey, the number of deaths and death rates have decreased gradually during the last decade. The figures represented in the graph below differ slightly from those used in the comparable chart in *Asthma in New Jersey* due to a change of source data[4]. Data in this chart and in succeeding charts are derived from the Multiple Cause of Death file for New Jersey, as provided by the National Center for Health Care Statistics. Data used in the previous report were obtained from the New Jersey Single Cause of Death file. The age-adjusted asthma mortality rate is lower for New Jersey than for the comparable national population. The rate of asthma deaths has decreased from the mid-1990s. In New Jersey, there were 1,492 deaths due to asthma from 1989 through 2000 combined (14.8 per 1,000,000 population, annualized). The New Jersey death rate for asthma among females is consistently greater than among males over the 11-year period of available data.
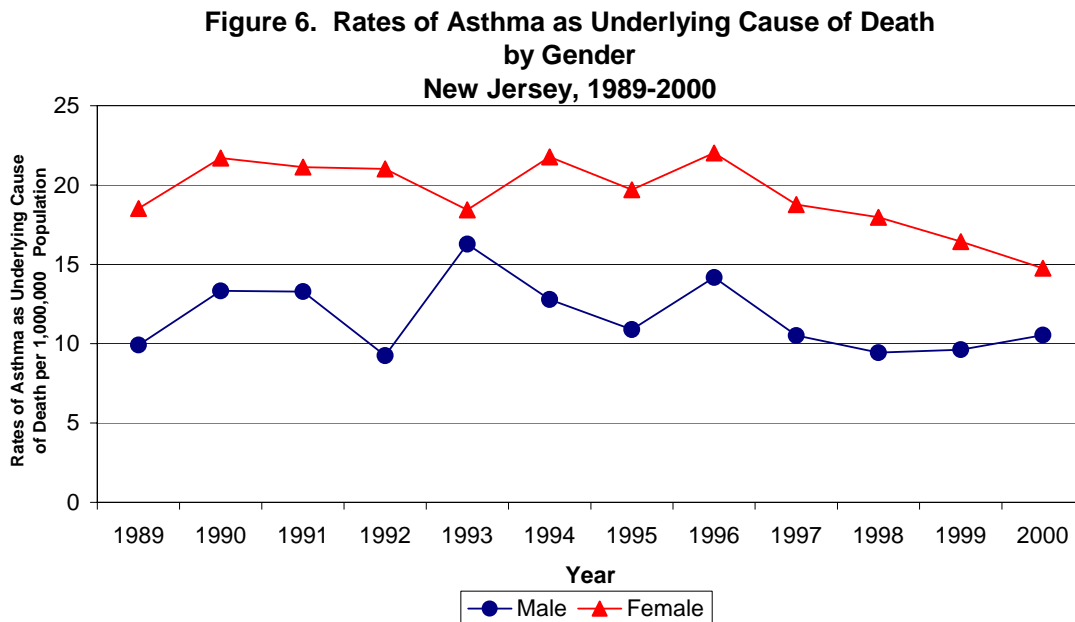
Figure 6. Rates of Asthma as Underlying Cause of Death by Gender New Jersey, 1989-2000

Source: New Jersey Multiple Cause of Death Files 1989-2000
as provided by the National Center for Health Statistics to the
New Jersey Department of Health and Senior Services, Center for Health Statistics
Rates represent deaths of New Jersey residents
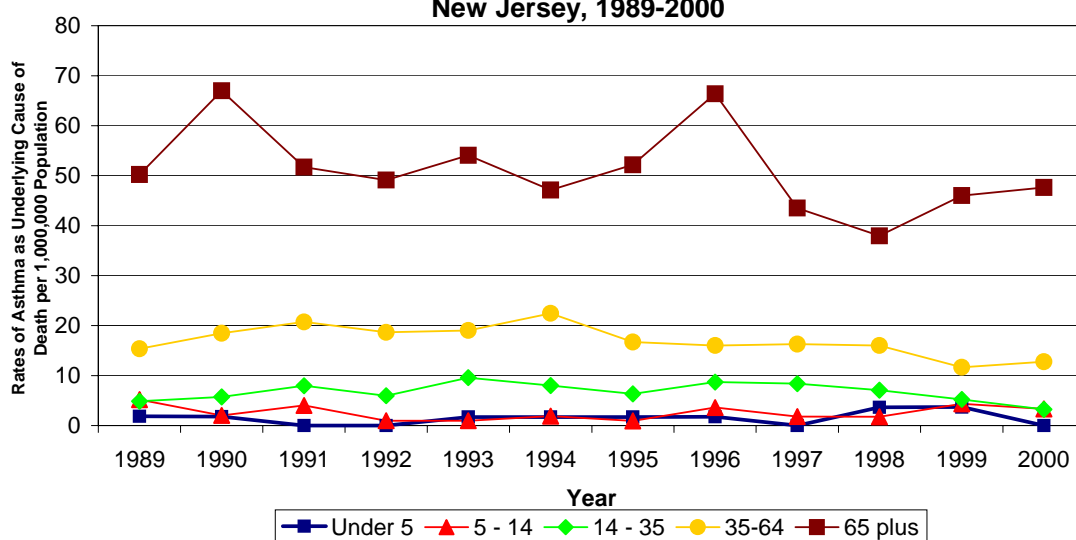Asthma defined as an underlying cause of death with ICD-9 Code 493 et al or ICD-10 Code J45-46

- Even though the number of deaths from asthma is relatively few, black non-Hispanic New Jersey residents have asthma mortality rates three times greater than their white non-Hispanic counterparts.
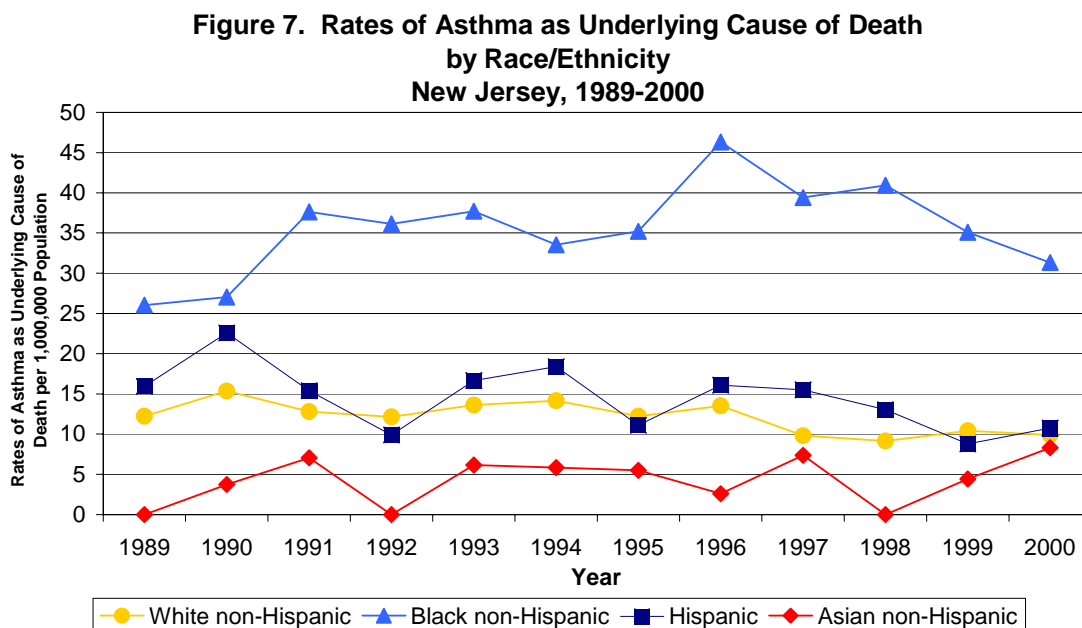
Figure 7. Rates of Asthma as Underlying Cause of Death by Race/Ethnicity New Jersey, 1989-2000

Source: New Jersey Multiple Cause of Death Files 1989-2000
as provided by the National Center for Health Statistics to the
New Jersey Department of Health and Senior Services, Center for Health Statistics
Rates represent deaths of New Jersey residents
Asthma defined as an underlying cause of death with ICD-9 Code 493 et al or ICD-10 Code J45-46

- Risk of death from asthma increases considerably with age, with the 65-plus population having the highest rates.

Figure 8. Rates of Asthma as Underlying Cause of Death by Age Group New Jersey, 1989-2000

Source: New Jersey Multiple Cause of Death Files 1989-2000
as provided by the National Center for Health Statistics to the
New Jersey Department of Health and Senior Services, Center for Health Statistics
Rates represent deaths of New Jersey residents
Asthma defined as an underlying cause of death with ICD-9 Code 493 et. al. or ICD-10 Code J45-46

Part 2 – Occupational Asthma

Prevalence

Occupational asthma has become the most common work-related lung disease in the United States.[5] Currently there are no reliable data on the prevalence of occupational asthma in New Jersey.

- Nationally, an estimated 15% of adult asthma is attributable to occupational factors.[6]

- Based on this estimate, 67,500 adults in New Jersey may have asthma caused or aggravated by their job.

Prevalence data for occupational asthma in New Jersey are being collected for the first time in the 2003 New Jersey BRFSS survey, which includes two questions specific to occupational asthma.

California, Massachusetts, and Michigan added the two occupational asthma questions to their respective BRFSS surveys in 2001.

- Across the three states, 12.4-13.1% of adults surveyed reported asthma sometime during their lifetime.

- 7.5-9.5% reported current asthma.

- Of those with current asthma, 7.4-9.7% reported that their asthma may be work-related based on discussions with their health care provider.

- The prevalence of occupational asthma was 15-20% for men with adult-onset asthma.

- Based on these results, an estimated 227,000 adults in the three states have asthma that may be work-related.

Background

Occupational asthma can be a debilitating lung disease with symptoms of chest tightness, cough, shortness of breath, and/or wheezing that develop in reaction to exposures to chemicals or other substances at work[7].

- Occupational asthma is an increasingly important cause of respiratory impairment and it can persist for years, even after cessation of workplace exposures.

- Early recognition of asthma and its connection to the workplace is particularly crucial because prompt prevention of further exposure to the offending agent can be extremely beneficial. Several fatal cases have been reported when workplace exposures continued to occur.[8]

- Identification of occupational asthma can also lead to the recognition of affected co-workers, the identification and correction of inadequate workplace exposure control measures, and the discovery of new causes of occupational asthma.

There are two general types of occupational asthma:

- allergic, or immunologically mediated, asthma which develops after a period of exposure to a sensitizing agent, and

- reactive airways dysfunction syndrome, or irritant-induced asthma, which is a nonimmunologic asthma that is typically caused by a single exposure to high levels of an irritating vapor, gas, fume, or smoke.

Occupational asthma also includes work-aggravated asthma, which is pre-existing asthma exacerbated by workplace exposures.

The number of agents that have been shown to cause occupational asthma is large and constantly growing. More than 350 substances have been associated with occupational asthma, affecting workers in a variety of industries and occupations, including:

- Chemical dusts or vapors from plasticizers, polyurethane paints, insulation, foam products, and other materials used in manufacturing and processing operations.

- Animal substances such as hair, dander, mites, small insects, and bacterial or protein dusts. Exposed workers at risk include farmers, animal handlers, shepherds, grooms, jockeys, veterinarians, and pet shop and kennel workers.

- Organic dusts such as flour, cereals, grains, coffee dust, tea dust, and papain dust from meat tenderizer. These substances can cause asthma in millers, bakers, and other food processors.

- Metals such as platinum, chromium, and nickel, as well as soldering fumes. Workers are exposed in refining and manufacturing operations.

- Microbial agents such as mold, fungus, and bacteria found in damp or poorly maintained buildings.

- Latex products and cleaning/disinfection agents used by janitorial workers and others in health-care facilities and office environments.

Diagnosis of Occupational Asthma

Occupational asthma is suspected on the basis of temporal associations between symptoms and time spent at and away from work. The following patterns of association between asthma symptoms and work are used to suggest the diagnosis of occupational asthma:

- Asthma symptoms develop or worsen with a new job or introduction of new materials.

- Asthma symptoms develop within minutes of specific activities or exposures at work.

- Delayed symptoms occur hours after exposure or during the evening of work days.

- No symptoms or less symptoms occur on days away from work and on vacation.

- Symptoms worsen on return to work after being away.

Surveillance for Occupational Asthma

The Occupational Health Surveillance Program (OHS) of NJDHSS conducts surveillance for occupational asthma under the Sentinel Event Notification Systems for Occupational Risks (SENSOR) Program. SENSOR is a state-based surveillance system organized and funded by the National Institute for Occupational Safety and Health (NIOSH) to target work-related health conditions. The components of the SENSOR asthma model include case ascertainment and follow-up, worksite intervention, summary data analysis, and broad-based prevention activities. Cases of occupational asthma are identified primarily through physician reports, hospital discharge data, and workers' compensation records.

The New Jersey SENSOR Program identified and confirmed 379 cases of occupational asthma between the years 1988 to 2002. Cases of occupational asthma were identified in all industry types. Figure 9 shows the industries in which more than 15 cases were identified.
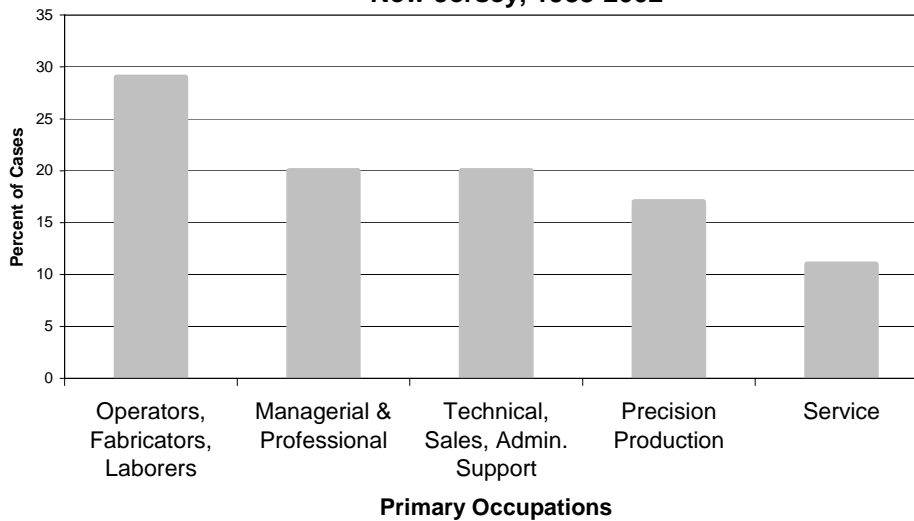
**Figure 9. Percent of Occupational Asthma Cases
by Industry Type
New Jersey, 1988-2002**
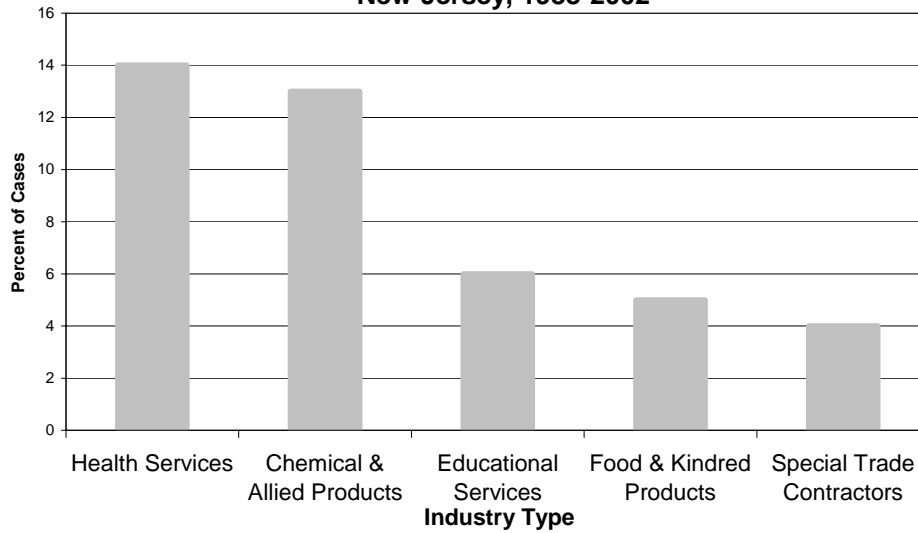
Source: New Jersey Occupational Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental, and Occupational Health
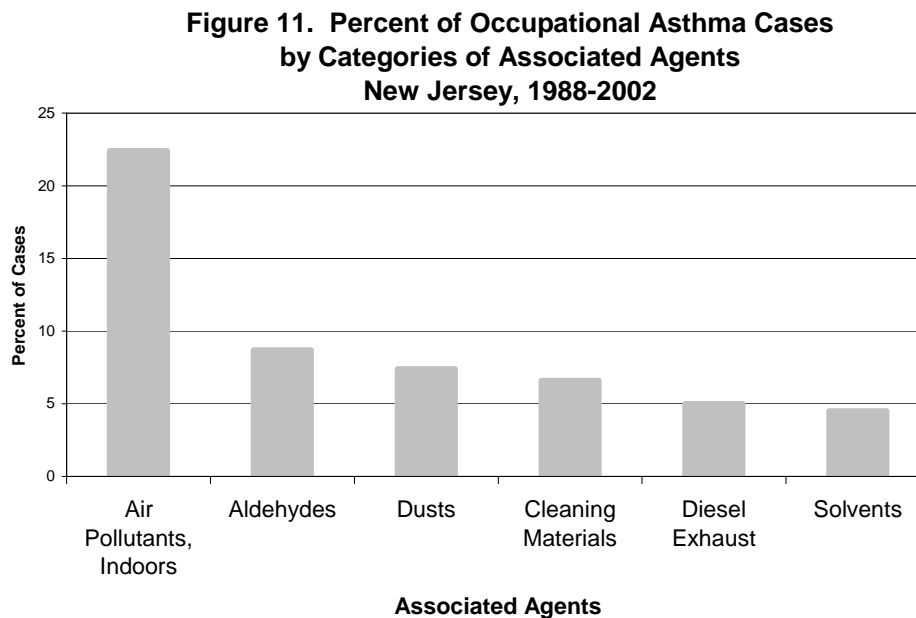Occupational Health Surveillance

The occupational categories most frequently identified for cases of occupational asthma
are shown in Figure 10.

**Figure 10. Percent of Occupational Asthma Cases
by Primary Occupations
New Jersey, 1988-2002**

Source: New Jersey Occupational Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental and Occupational Health
Occupational Health Surveillance

The most frequently identified causative agents for cases of occupational asthma are shown in Figure 11.

Figure 11. Percent of Occupational Asthma Cases by Categories of Associated Agents New Jersey, 1988-2002

Source: New Jersey Occupational Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental and Occupational Health
Occupational Health Surveillance

Conclusion

This report confirms that asthma continues to be a serious health problem in New Jersey, as it is in the rest of the nation. Report findings highlight the importance of state and local surveillance efforts and the need for data collection from existing and potential sources. Future reports on asthma in New Jersey will include updates of data in this report as well as information from new sources such as hospital emergency departments, workers' compensation claims, and Medicaid as it becomes available.

For further information, please contact one of the resources listed on the Asthma site available on the NJDHSS Internet site: http://www.state.nj.us/health/topics.htm#A

Data Sources:

[1] *Asthma in New Jersey*, New Jersey Department of Health and Senior Services, Division of Family Health Services.

[2] New Jersey Behavioral Risk Factor Surveillance System, 1999-2001. New Jersey Department of Health and Senior Services, Center for Health Care Statistics, Trenton, New Jersey.

[3] New Jersey Hospital Discharge File (UB-92), 1994-2002, Center for Health Statistics, Trenton, New Jersey.

[4] New Jersey Department of Health and Senior Services, Death Certificate Multiple Cause of Death Files, Center for Health Care Statistics, Trenton, New Jersey.

[5] NIOSH. (2002). Work-Related Lung Disease Surveillance Report, 2002. Cincinnati, Ohio: US Department of Health and Human Services, Public Health Service, CDC, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2003-111.

[6] American Thoracic Society, 2003. Occupational contribution to the burden of airway disease. Am J Respir Crit Care Med 167:787-797.

[7] Rosenman KD, Jo Reilly M. (2000). Asthma. In: Maizlish, Ed. Workplace Health Surveillance, An Action-Oriented Approach, Oxford University Press, 172-184.

[8] Ortega HG, Kreiss K, Schill DP, Weissman DN. Fatal asthma from powdering shark cartilage and review of fatal occupational asthma literature. Am Journal Ind Med. 2002 Jul;42(1):50-4.

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